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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/694,139 | 10/27/2003 | Tong Xiao | SUN030009 | 3241 |

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| EXAMINER |
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MEMULA, SURESH

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| ART UNIT | PAPER NUMBER |
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2825

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/21/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/694,139

Applicant(s)

XIAO ET AL.

Examiner

Suresh Memula

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This FINAL office action is a response to the amendments and remarks filed on 12/22/2006. The remarks are not persuasive; therefore, the rejections based on the prior art of record, Moon et al., are maintained. Claims 1-30 are pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-30 are rejected under 35 U.S.C. 102(e)** as being anticipated by US Pub. No. 2003/0121013 to Moon et al. (Moon).

3. As to Claim 1, and similarly recited Claims 11 and 21,
creating a unique clock waveform (Paragraphs 0008, 0041);
defining a clock domain for the clock waveform (Paragraphs 0036, 0087, 0115;
FIG. 2B);
injecting the clock domain (Paragraphs 0036, 0047; FIG. 2B) into a control node
(Paragraphs 0036, 0047; FIG. 1-2, 5-6, 9-11, 13-14, 18, 19, 21);
propagating the clock waveform (Paragraphs 0008, 0035-0036, 0041) from the
control node (Paragraphs 0036, 0047; FIG. 1-2, 5-6, 9-11, 13-14, 18, 19, 21) to a
transitively adjacent observation node (Paragraphs 0035-0036; FIG. 1-2, 5-6, 9-10, 13-
14, 18, 19, 21); and

retrieving transitively adjacent control node information to determine path delay
information (Paragraphs 0004, 0007, 0036, 0039, 0041) from the control node
(Paragraphs 0036, 0047; FIG. 1-2, 5-6, 9-11, 13-14, 18, 19, 21) to the transitively
adjacent observation node (Paragraphs 0035-0036; FIG. 1-2, 5-6, 9-10, 13-14, 18, 19,
21) based upon propagation of clock waveform (Paragraphs 0008, 0035-0036, 0041;
FIG. 1-2, 5-6, 9-10, 13-14, 18, 19, 21).

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4. As to Claim 2, and similarly recited Claims 12 and 22, the clock domain includes a rising edge clock domain and a falling edge clock domain (Paragraph 0036; FIG. 2B); and, the path delay information includes information relating to the rising edge clock domain and the falling edge clock domain (Paragraph 0036; FIG. 2B).
5. As to Claim 3, and similarly recited Claims 13 and 23, the transitively adjacent observation node becomes a pseudo control node (FIG. 14).
6. As to Claim 4, and similarly recited Claims 14 and 24, the connectivity graph includes information of a path between the control node and the transitively adjacent observation node (Paragraphs 0007, 0036).
7. As to Claim 5, and similarly recited Claims 15 and 25, the path between the control node and the transitively adjacent observation node is a direct path (FIG. 1, 5B, 13).
8. As to Claim 6, and similarly recited Claims 16 and 26, the path between the control node and the transitively adjacent observation node includes combination logic (Paragraphs 0009, 0039, 0048; FIG. 9-10, 14).
9. As to Claim 7, and similarly recited Claims 17 and 27, the path between the control node and the transitively adjacent observation node includes a flop (FIG. 9-10, 14).
10. As to Claim 8, and similarly recited Claims 18 and 28, the path delay information includes timing constraint information (Abstract; Paragraphs 0005-0006, 0010, 0035-0036).
11. As to Claim 9, and similarly recited Claims 19 and 29, the timing constraint information includes setup constraint timing constraint information (Paragraphs 0036, 0080; FIG. 2A, 9-10).
12. As to Claim 10, and similarly recited Claim 20 and 30, the timing constraint information includes hold constraint timing constraint information (Paragraphs 0036, 0080; FIG. 2A, 9-10).

Response to Applicant Remarks

13. The applicant states:
- (a) "Moon does not teach creating a unique clock waveform..."
 - (b) "...Moon does not teach defining a clock domain as required by independent claim 1, 11, and 21"
 - (c) "...Moon does not teach injecting the clock domain into a control node"
 - (d) "...Moon does not teach clock waveform propagation as required by each of the independent claims"

Examiner's Response:

14. **Regarding (a):** Moon discloses "...clock waveforms different from the ones used to build the model" (Paragraph 0041), i.e., unique.

15. **Regarding (b):** In Claim 2 and similarly recited Claims 12 and 22, the applicant recites: "the clock domain includes rising edge clock domain and a falling edge clock domain". Accordingly, Moon teaches a clock (FIG. 2B; element "CLK") including rising edge (FIG. 2B; element "Rising") and falling edge (FIG. 2B; element "Falling"), i.e., clock domain; and additionally Moon teaches check arcs (Paragraph 0036) define rising transitions (Paragraphs 0036, 0087, 0115) and falling transitions (Paragraphs 0036, 0087, 0115), i.e., clock domain. Although the prior art does not use the phraseology "clock domain", the prior art discloses the elements the applicant has defined to constitute "clock domain".

16. **Regarding (c):** Merriam-Webster's online dictionary defines "inject" as: "to introduce as an element or factor in or into some situation or subject". Accordingly, the limitation "injecting the clock domain into a control node" is interpreted as being read on by one or more of the following:

- (i) "...check arcs originate from and terminate at pins...." (Paragraph 0036)
- (ii) "...check arcs which originate from primary input pins..." (Paragraph 0047)

17. Although the prior art does not use the phraseology "control node", the prior discloses pins (Paragraphs 0036, 0047), i.e., nodes, that involve originating/initiating/introducing (Paragraphs 0036, 0047), i.e., injecting, delay arcs (Paragraphs 0036, 0087, 0115), i.e., clock domain.

18. **Regarding (d):** Moon discloses "[t]he model can capture the latch time borrowing behavior of the original netlist for some given clock waveforms" (Paragraph 0008); although the prior art does not specifically recite "propagating", propagation of the clock waveform is interpreted from the phrase "for some given clock waveforms" (Paragraph 0008) since latch behavior is obtained in accordance with the clock waveforms (Paragraph 0008).

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
20. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.
21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suresh Memula whose telephone number is (571) 272-8046. The examiner can normally be reached on M-F 8am-4:30pm EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
22. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Suresh Memula
Art Unit 2825
March 16, 2007

PAUL DINH
PRIMARY EXAMINER

